

PUBLIC HEALTH ACT,  
(11 & 12 Vict., cap. 63).

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R E P O R T

TO THE

GENERAL BOARD OF HEALTH,

ON A

PRELIMINARY INQUIRY

INTO THE SEWERAGE, DRAINAGE, AND SUPPLY OF  
WATER, AND THE SANITARY CONDITION  
OF THE INHABITANTS

OF THE PARISH OF

E P S O M.

BY WILLIAM LEE, Esq., C.E.,  
SUPERINTENDING INSPECTOR.



L O N D O N :

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FOR HER MAJESTY'S STATIONERY OFFICE.

1849.

## NOTIFICATION.

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THE General Board of Health hereby give notice, in terms of section 9th of the Public Health Act, that on or before the 12th day of January, 1850, written statements may be forwarded to the Board with respect to any matter contained in or omitted from the accompanying Report on the Sewerage, Drainage, and Supply of Water, and the Sanitary Condition of the Parish of EPSOM, or with respect to any amendment to be proposed therein.

By order of the Board,

HENRY AUSTIN, *Secretary.*

*Gwydyr House, Whitehall,  
3rd December, 1849.*

## PUBLIC HEALTH ACT (11 and 12 Vic., Cap. 63).

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*Report to the General Board of Health, on a Preliminary Inquiry into the Sewerage, Drainage, and Supply of Water, and the Sanitary Condition of the Inhabitants of the Parish of EPSOM, in the County of Surrey. By WILLIAM LEE, Esq., C.E., Superintending Inspector.*

WHEREAS, in pursuance of the Public Health Act, 1848, the General Board of Health, appointed for the purposes of that Act, have, upon the petition of not less than one-tenth of the inhabitants rated to the relief of the poor of and within the parish of Epsom, in the county of Surrey (the number of the said petitioners greatly exceeding thirty in the whole), directed William Lee, a Superintending Inspector, appointed for the purposes of the said Act, to visit the said parish, and to make public inquiry, and to examine witnesses as to the sewage, drainage, and supply of water, the state of the burial-grounds, the number, and sanitary condition of the inhabitants, and as to any Local Acts of Parliament in force within such parish, for paving, lighting, cleansing, watching, regulating, supplying with water, or improving the said parish, or having relation to the purposes of the said Act; also as to the natural drainage areas, and the existing municipal, parochial, or other local boundaries, and the boundaries which might be most advantageously adopted for the purposes of the said Act.

Now I, the said William Lee, having previously given the notices directed by the said Act, proceeded upon the said inquiry in the manner directed by the said Act, and do report in writing, to the said General Board, upon the several matters with respect to which, I was so directed to inquire as aforesaid, and upon certain other matters, in respect of which I deem it expedient to report for the purposes of the said Act, as follows:—

MY LORDS AND GENTLEMEN, *Gwydyr House, 16th Aug., 1849.*

THE inquiry at Epsom was opened in the Assembly Rooms there on the 1st instant, and the investigation was continued on that and the two following days, until I had inspected the whole of the town and parish, and had heard all persons who chose to give information touching the inquiry

After proof that the notices had been duly affixed I ex-  
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plained the mode of proceeding to the inhabitants present, and asked, according to my instructions, for a list of the places where epidemic, endemic, and contagious diseases had of late occurred. Mr. Everest, the union clerk, gave me the following localities:—THE WORKHOUSE, *typhoid fever*; CHURCH-STREET, *scarlet fever*; THE PARISH GENERALLY, *low fever*, not referable to any particular locality.

I thought it well to examine the medical relief books, and found that in the quarter ending on the 25th of March, in the present year, there had been in the Union workhouse 29 cases of fever, and 18 described as debility from fever; total 47. In addition to these, there were at the same time 19 cases of fever in the town attended to by the medical officer of the Union; and many others among persons whose circumstances placed them above the necessity of parochial medical attendance, and who are therefore not recorded in the Union books.

The following memorandum is appended at the close of the quarterly account:—

“Continued fever has prevailed very extensively in the parish of Epsom, of a severe character. Some cases of scarlet fever have also occurred. There has been a very considerable amount of disease.”

I found it difficult to obtain the names of specific localities of disease; the medical practitioners, and others present, stating, that low typhoid fever had existed in all parts of the town, without exception, and I therefore proceeded to make a careful inspection of the whole parish. I was much assisted during this part of my duty by the following gentlemen, some of whom accompanied me during three successive days:—John Trotter, Esq., justice of the peace; George Giberne, Esq.: George Stilwell, Esq., medical officer of the Epsom district of the Union; John Allan, Esq., surgeon; William Everest, Esq., clerk to the justices, and Union clerk; Henry Andrews, Esq., architect and surveyor; Benjamin Tomkins, Esq.; Mr. Lawrence Langlands; and John Steele, Esq. I am also under considerable obligation to many other of the inhabitants, especially to the medical practitioners in the town for their valuable assistance during the inquiry.


EPSOM is a parish and market town in the first division of the hundred of Copthorne and Effingham, in the west division of the county of Surrey. It is distant 15 miles from London. The parish contains about 4,390 acres, of which about 3,445 are under cultivation, and principally inclosed, the remainder open common and down. The Epsom Union comprises 15 parishes and places, containing a population of about 18,000. The population of the parish is upwards of 4,000. There are a tallow-chandler and a fellmonger in the town, and two breweries; but, besides these, no trades are carried on but





SCALE.





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such as are necessary to all towns. The poorer classes are almost entirely occupied in the open air: at least one-half in agricultural pursuits, and the other half in the ordinary avocations of labourers in a wealthy country district. It would be difficult to conceive a town in which the occupations of the inhabitants are more conducive to health than in Epsom.

There are two manors in Epsom. John Trotter, Esq., is lord of the manor of Horton, the boundaries of which are almost the same as those of the park surrounding his mansion. John Ivat Briscoe, Esq., is lord of the manor of Epsom. A court leet and court baron of the latter are held annually, at which encroachments are presented; but no cognizance is taken of anything connected with the sanitary condition of the town. The Surveyors of the Highways and the Poor Law Guardians are the only public bodies having any jurisdiction in such matters, and a conviction of the utter inadequacy of the powers with which they are invested, to meet the requirements of the town, has led to the present general feeling in favour of the application of the Public Health Act.

The General Watching and Lighting Act was brought into operation eight or nine years since, and nine inspectors are annually appointed by the ratepayers. Their duties are confined to the public lighting, inasmuch as Epsom is within the jurisdiction of the Metropolitan Police Commissioners.

A local Act of Parliament was passed during the late session, intituled "An Act for more effectually assessing and collecting the Poor Rate, and all other Rates and Assessments, in the parish of Epsom, in the county of Surrey; and for the better management of the business and affairs of the said Parish, and for other purposes relating thereto." There is no other local Act of Parliament in force within the parish for paving, lighting, cleansing, watching, regulating, supplying with water, or improving the same, or having relation to the purposes of the Public Health Act.

There is a very excellent first class map of the parish, sealed by the Tithe Commissioners, in the custody of Mr. Everest, clerk to the justices. The scale is however not more than three chains in an inch.

CONTOUR, GEOLOGY, AND METEOROLOGY OF THE DISTRICT.  
—The legal boundaries of the parish are, almost without exception, those which any experienced engineer would recommend as the best for sanitary purposes, exclusive of all other considerations. With the exception of the north-east side, they run almost entirely along the water-shed, and enclose an amphitheatre about  $3\frac{1}{2}$  miles long and 2 miles wide. The town of Epsom is situated in the centre of this, with a good outfall to the Hog's Mill river in the adjoining parish of Ewell. Three small tributaries of this stream have their source in Epsom,

close to the town; but become united into one at the north-eastern boundary of the parish, about half a mile from Epsom Court. Very nearly the whole of the parish inclines to this point, and though any longitudinal section of the parish would show the town to be almost in the lowest part, there is yet a fall of nearly 40 feet from one side of the town to the other, measuring through the streets a length of about 1,300 yards. After a course of about six miles, the Hog's Mill river discharges into the Thames at Kingston. The basin-like form of the parish causes the water to shoot rapidly from the sides of the hills, and I am informed that the town is subject to floods during thunder-storms; but the water soon passes off, and this does not contravene the fact that the contour of Epsom is very favourable to the discharge of surface-water. It would be easy, at a trifling cost, to improve the outfall so as to obviate the inconvenience of these occasional floods.

The surface-soil of Epsom is much diversified. On the south-east side, forming the Downs, it is little more than disintegrated chalk, constituting a very thin coating of a porous character. It produces a fine turf, upon part of which the celebrated race-course is situated. It has been considered too light and thin to be very productive, but is capable of great improvement if ploughed and top-dressed with clay. The soil on the north-west is heavy clay, which in seasons of drought becomes baked, and is said to crack often a yard in depth. The opposite mode of treatment to that recommended for the downs would render this land also very fertile, namely, thorough drainage, deep ploughing, fallows, and the application of light porous material, as top-dressing. Between these are all the gradations from clay to gravel, sand, the common vegetable humus, and light soil with flints. On the north-east, in Hog's Mill Valley, it is an alluvium derived from all these sources, and, if properly drained, is capable, with the addition of the liquid sewage manure of Epsom, of attaining the highest possible fertility.

The subsoil on the north-east is a bed of yellow clay, not more than a foot thick; on the north-west, a very retentive loamy clay. There is a vein of sand running from the north-west to the south-east, but the general character of the subsoil on the south-west of the parish is gravel of the ordinary kind found in the London basin, and varying from 3 to 9 feet thick. On a great portion of the south-east side there is no subsoil whatever. The vegetable humus lies immediately upon the chalk.

The geological strata are gravel, London clay, plastic clay, greensand, and chalk. The town of Epsom is situate at the junction of these beds. The chalk rises rapidly south-east by east, and there are several pits close to the town. The London clay ranges from the south-west to the north-west of the parish,



and in it are found the mineral springs for which Epsom was once so celebrated. The clay is covered by gravel, in which there are some large and excellent ponds of water upon the common, near the lodge of Woodcote Park. On the north-east at the outlet of the valley the stratum is the greensand. In the bottom of the valley, extending westward from the church to the Dorking-road, there is a stratum of the greensand mixed with fragments of chalk. This immediately overlies the chalk; and is the locality of a singular phenomenon called "the Earth Bourne," which will require to be provided for in any arrangements for draining the town.

The Earth Bourne is an intermittent spring, permeating the whole of this bed of sand and gravel, usually rising within a foot or two of the surface over a considerable area, and sometimes oozing out above the ground. Mr. Everest, to whom I am indebted for much information on this, and many other matters connected with the inquiry, says:—

"Its duration and the time of its recurrence are alike irregular, although it seldom fails to succeed a wet summer. Sometimes it does not appear for three or four years, and then flows for two or three years successively. Its duration varies from four to eight months. It generally commences running soon after Christmas, and disappears about May or June. The wells gradually rise, and frequently overflow, and the water is beautifully clear and sweet."

The Earth Bourne is produced by the simple laws of hydraulic pressure. The area over which it extends is in the bottom of the basin, and the chalk rising from beneath the gravel at that point assumes the form of bold sloping hills, and attains a considerable altitude on the downs. The absorbent power of the chalk is so great that comparatively little of the rainfall is evaporated; and during ordinary rain the water is constantly descending through the chalk to the level of the wells and springs and other outlets in the valley. After long-continued and excessive rain, however, these outlets become insufficient for its discharge, and it accumulates in the chalk until the vertical pressure forces it up through the gravel in the form of a syphon, and produces the "Earth Bourne."

No person in Epsom has kept any meteorological tables. The rainfall is stated to be under the average. I should not assume a greater quantity than 25 inches annually for any calculations respecting sanitary works.

The prevalent wind is from the S.W.

The climate of Epsom is genial. The winds from the Downs and Common are soft and refreshing. Naturally, every circumstance connected with the position of the town is in the highest degree favourable to the health and longevity of the inhabitants. All the medical witnesses concurred in saying that but for its defective sanitary condition it would be exceedingly healthy; while two or three of the inhabitants con-

tinually reiterated their objections to the Public Health Act, by informing me that Epsom was one of the most healthy places in England. This statement is calculated to afford very little consolation to the friends of those who have died within the last two or three years from preventible diseases, and I am sorry to say that the assertion is incorrect, as will fully appear hereafter; but, at the same time, I have no hesitation in saying, that, with such great natural advantages, the powers conferred by the Public Health Act are capable of raising the sanitary condition of Epsom to the highest standard attainable in this country.

POPULATION AND RATE OF INCREASE, NUMBER OF HOUSES, &c.—At the Census taken in 1831, the number of inhabitants was 3,231. In 1841 they had increased to 3,533, being at the rate of 9 per cent. during the 10 years. The Superintendent-Registrar computes the number to be 4,200 in 1848, being an increase of 18·88 per cent. in 7 years. The number of houses in 1831 was 582. In 1841 it was 635, and in 1848, 643. The number of inhabitants to each house in 1831 was 5·55. In 1841 it was 5·56, and in 1848, 6·53.

The following is a classification of the houses in Epsom, according to the annual rateable value. It was stated that the house property is generally assessed at a low rate; but, even at the present rate, the list is an indication of the great wealth of Epsom in proportion to its size, the aggregate rateable value of the house property alone being little less than 10,000*l.* per annum.

Rated at £3 and under £4		No. of Houses.
		40
4	5	116
5	6	67
6	7	67
7	8	46
8	9	16
9	10	25
10	15	87
15	20	53
20	25	38
25	30	17
30	40	26
40	50	8
50	60	6
60	70	2
70	80	3
80	90	6
90	100	1
100	110	1
110 and upwards		9

CONSTRUCTION OF HOUSES AND THEIR APPURTENANCES.—The construction of many of the houses, especially the cottages, is very defective. Mr. Henry Andrews, architect and builder, says in his evidence:—

“A large proportion of the smaller houses in Epsom are badly built, with reference either to comfort or durability. I should think one-third of the houses in Epsom are built of wood. The backs of the houses, especially of those on the south side of the town, are very much confined. There is very little access of air to the back premises, though the public thoroughfares are well ventilated. The ventilation of the houses is very bad. In the old houses the upper sash is generally fast, and most of the chambers are very low. These are reasons why the external atmosphere should be maintained in as great purity as possible. The privies are mostly wooden cabins close behind the houses; they are universally untrapped, and with cesspools, most of which are unstained. The closeness of these places to the houses coops up the air contained in them, and the foul stench finds its way into the buildings.”

During my inspection of the town, I had abundant opportunities of proving the accuracy of the above testimony.

There are some very bad cottages in Woodcote-lane. At the back of one of them belonging to Mr. James Chandler, and close to the house, there is a great heap of pig-manure, the surface of which is about 20 feet by 11 feet. The occupant is James Hooper, and his daughter, a very interesting and intelligent girl, said, in answer to my inquiries:—

“My mother has been dead two years. She went off in a decline. I am 13 years of age, and have two brothers of the ages of 9 and 5 years. My father is a gardener. We have two rooms: one for living, and one for sleeping. There is a hole through the wall, and a pigstye and a cowhouse built against the house. There is very often a bad smell in the house. We are obliged to carry all the slops and rubbish to the privy: we have nowhere else to put them. My two little brothers have been sick.”

In Pound-lane there are nine cottages, three of which pay 2s. 10d. each rent per week, and the remainder 2s. each. There are most offensive piggeries in front, and a foul disgusting channel. The privy soil runs down at the back, against the walls, and through them, and under the floors. The fall is good, and everything might be perfectly drained away. The well for supplying the houses with water is in a very offensive state. Mr. Stilwell, the medical officer, said that he frequently had fever in these houses; and one of the other gentlemen who accompanied me properly designated the living in such places as brutality.

There is a considerable number of cottages on the Common, said to have been erected on the waste, and the owners to have ultimately acquired freeholds by lapse of time. They form quite a colony distinct from the town. There are doubtless



many good and honest labourers among them, but I was informed that some of the occupants are of indifferent character. It was stated that demoralization and degradation result from the enjoyment of such privileges without any necessary exertion on the part of the cottager; and that from living in a house without paying rent, keeping pigs and geese on the Common, and cutting turf without rendering any equivalent, some of the men lead an idle life, and become drunkards or otherwise immoral. There are two beer-houses among them. Many of these cottages are unfit for human dwellings, and in every possible respect their sanitary condition is bad. The inhabitants of part of the Common have no water to drink but what is taken from a pond into which all the drainage of the houses flows. The houses are elevated, many of them at least 100 feet above the lower part of the town, and the external air blowing over the Common is pure and soft and balmy; but these houses are said never to be without fever, in consequence of their bad construction, and the accumulations of decomposing matter in their immediate vicinity. James Hazle is the occupant of one of them in *Pantile-row*, and the following is the statement of his wife:—

“We have seven children, four of them at home. We have lost two or three. We have lived here about a year and a half. My husband is a labourer, and can earn 2s. 6d. per day, but he is not employed more than half his time. We use coals when we can get them, and at other times wood. The ditch at the end of the house is very bad, and smells dreadfully. There are millions of small flies on the mud. Two of my children have had fever this year, and they are not so strong as they were before. We have to go more than a quarter of a mile for water. There is a pond nearer, but a dead cow has been put in it, and we cannot use the water. When not washing, we make two or three pailfulls serve for a day. We should use much more if we could get it. There has also been a good deal of fever in the houses above us.”

The buildings in Epsom have been generally erected without any public arrangement or restriction as to size, site, materials, thickness of walls, drainage, supply of water, or other consideration connected with the comfort and convenience of the tenants. There are very few cellars in the town, and those few are, almost without exception, flooded. Notwithstanding this, rents are high, houses costing 60*l.* constructed as at present, let for 7*l.* per annum; and the rents of many are equal to one-fourth the income of the family.

In order to show the confined condition of the back premises, and the impossibility of any free current of air to remove the injurious emanations from privies, &c., I have prepared a plan of the Coffee-house Buildings, which is among the most valuable property in the town for business purposes.

Most of the buildings are insured, but on account of so large a portion of the houses, and nearly all the out-buildings, being of wood, the rate is "hazardous." If a fire were to break out at either end of the town, with the wind favourable to its spread, the deficiency of water, and the great quantity of wood in the buildings, would enable it to spread throughout the town in a very short time. There is a public fire-engine, but it would be of little use unless the fire was near the pond in the centre of the town.

Mr. Everest says at the conclusion of his evidence :—

"I think the application of the Public Health Act will be exceedingly beneficial, because, in addition to other reasons which might be given, there has been an incessant application for houses since the establishment of the railway. The town will certainly increase rapidly, and it is desirable that some control should be exercised over the construction of houses."

DISEASES AND MORTALITY.—During the inspection of the town, I met with many instances of disease directly caused by contiguity to accumulations of decomposing animal and vegetable matter. Two or three instances of what came directly under my own notice must suffice, because the evidence of the medical witnesses under this head is most important.

At the top of *Clay-hill*, in a very elevated situation, open to the pure air of the Common, there are three houses belonging to Mr. William Wood. I found a most filthy, loathsome ditch at the back, and fever in every house. It had been raging for more than six months. On inquiry at one of them, William Arthur's wife said :—

"My husband has been ill of fever eight weeks, and unable to work. He is a farm labourer, and earns when well 14s. per week. We pay 3s. 6d. per week rent, and receive 10s. now from a sick club. This sickness is a very great calamity to us. My husband's employer has been very kind to us.

"*Four privies all pour their night soil into the ditch at the back.* We fetch water either from the pond near the new church, or from the pump in the town. Either of the two places is half a mile distant. We use a tub per day containing five pails. We buy water sometimes. The price is  $\frac{1}{2}$ d. per pail of about three gallons."\*

At *World's End* there is a row of wooden cottages near Durans, the residence of Sir Gilbert Heathcote, Bart. The inclination of the ground is considerable, but there is no drainage or water supply to the houses; and at the back I found a hole about 12 feet by 9, containing a great quantity of decomposing vegetable matter. In one of these cottages two children had

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\* Since writing the above, one of the gentlemen who accompanied me to the place has informed me in a letter, on another part of the inquiry, that William Arthur is dead. I cannot conceive a situation *naturally* more healthy than that in which this man perished. He was the father of a family of small children.

scarlatina at the time of my visit, and the tenant of the next door made the following statement:—

“My husband died four years ago of scarlet fever, and I lost a son four months previously. Two others of my children have had it, but recovered. There are no drains. We throw all the refuse at the back. We have no water.”\*

In the street or lane leading from the end of East-street to the Withy Beds, there are some houses in a most deplorable condition. The tenants complained bitterly of the cesspools and ditches. Mr. Giberne said that a Mrs. Holt had lived in one of the houses and had fever. She removed, and immediately recovered. He had seen the ditches quite full of stagnant matter.

The present tenant of that house is John Wildey, and his wife said:—

“We pay 2s. 9d. per week rent, and have one low room, and one chamber. My husband is a carpenter. We have six children, three of them have had fever, and have not recovered yet. The children were strong and healthy before we came here, and then fell off immediately. We have no water. We beg it for all purposes. The nearest place where we can get any is 40 yards distant. We generally have three pails per day, sometimes four. We have no place in which to put rubbish and refuse; we throw it out of doors. We have no back doors, nor back openings for ventilation, air, or light. There is a deep cesspool, containing two cart-loads of nightsoil. It is not trapped; the privy opens into it, and is most disgusting. It makes everybody sick about the place. When emptied it is taken out in pails. There is no drainage at all about the premises; everything is stagnant. Before coming here, we lived at Ashted for six years, and we never had sickness in the house. Since we lived here, we have had nothing else but sickness. There are about a dozen houses, and they are nearly all alike.”

Mrs. *P. Young*, grocer in High-street, said:—

“We cannot make any use of the cellar under our front shop. It has been damp ever since we came here, three years ago. The water has been in now a year, six inches deep, and it stinks very bad. We are also much annoyed with pigs at the back. We had three of the family sick of low fever from it during last winter, and the servant was obliged to go away.”

It would be very easy to multiply cases of this description from the minutes taken during my inspection; but I must now proceed to the evidence of the medical practitioners, in order that this Report may not exceed due limits.

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\* As another proof of the necessity for immediate measures of prevention, I have received from Mr. Stilwell, surgeon, since this Report was in the hands of the printers, a note, in which he says: “Since your inquiry measles and scarlet fever have prevailed very generally; the latter has been fatal in several instances, and three cases of death have occurred in the cottages inspected by you near Sir Gilbert Heathcote’s.”



*Joseph Ward, Esq.*, says :—

"I have been in practice as a surgeon in Epsom and its vicinity for about 25 years. In the early part of my professional career, I was several years apothecary to the London Hospital. I have had much experience in zymotic diseases, and believe that they might be greatly mitigated in Epsom if the drainage of the town were improved. The open ditches and stagnant waters are aggravating causes of disease. I think the town pond unwholesome. It is calculated to promote zymotic disease, and has done so. Such diseases have prevailed in the neighbourhood of that pond. I have had two cases of malignant cholera in the town this year, both fatal. I do not think, however, that either of them had any connection with the want of drainage. The prevailing disease of Epsom is low fever, often of a very obstinate character, and difficult to cure. There has also been scarlet fever. I know the ditch on the Dorking-road, and consider it likely to engender disease all the way up to Woodcote-green. I have had fever there repeatedly. The removal of that ditch would, therefore, be beneficial to the health of the place. I am also acquainted with the ditch near the National School at the eastern end of Epsom. It is most offensive, and calculated to produce disease. The sewerage of the town is generally in a defective state, and injurious to the health of the inhabitants. *I believe that fever has, on the whole, increased within the last few years.* It sometimes assumes a typhoid form. I find that measles, scarlatina, and other diseases, which, perhaps, cannot be said to originate in the want of sanitary arrangements, are yet very much aggravated thereby. The low endemic fever has also a tendency to undermine the constitution, and persons who are so debilitated either sink under attacks of active disease from which others in healthy localities recover, or else they continue ill a long time. I should not say that fever could be eradicated; but I have no doubt that it is both generated and aggravated by dirt, and I believe that it might be brought down by sanitary improvements as small-pox is by vaccination, that is, in a proportionate degree. Epsom would be a decidedly healthy place if it had good drainage."

*Hubert Shelley, Esq., M.B.*, said :—

"I am a general practitioner in Epsom, and have had considerable experience among the poor. My attention has been drawn to the state of the sewerage in Epsom. My surgery is very near the outlet of the sewer at the east end of the town. When it was first opened, I resided there, but found the effluvium so offensive that I was obliged to go out in an evening to get a little pure air. I was seized with intermittent fever about six weeks after I began to reside there. I attribute that disease certainly to the locality where I resided, and have felt it necessary to sleep in a more healthy situation. The change has been very beneficial indeed. I have attended a great many cases of low fever. They were all of a typhoid form, and obstinate. I had between 40 and 50 cases in the Union workhouse *alone* during the last autumn. The contents of a cesspool were removed, and there were no cases of fever afterwards.

"From my experience, the prevalent diseases of Epsom are of a zymotic character, and will be mitigated by improved sanitary arrange-

ments. The general state of the drainage of the town is very prejudicial to the health of the inhabitants."

*John Allan, Esq.*, surgeon, has practised in Epsom 23 years, and gives concurrent testimony as to the diseases of the town and their causes. He adds:—

"I have had great experience in cases of low fever here, and have found some of them of an intractable character. I attribute those fevers to the defective drainage of the place. I pass the drain or ditch on the Dorking-road every day, and have been struck with the offensive exhalations. I am the medical attendant on Sir Gilbert Heathcote, and he has frequently complained of the smells in the avenue leading up to his house. He covered a ditch there as far as his property extended. There are now four cases of scarlatina in the neighbourhood of Durdans. There are very offensive smells there, and wherever such smells exist they must aggravate fever.

"I have remarked severe disease in the neighbourhood of the National School. The drainage of the town lies nearly stagnant there. Last September I had four cases of severe British cholera, but they all recovered. Besides them, there was then one case of Asiatic cholera, which also recovered. Last week a patient of mine died of malignant cholera. She was in good circumstances. She caught it in London; but there is no drainage to the house in which she lived; as there is not to any house almost in the town. *They have mostly cesspools.* When the wind comes from the north-east, in the direction of the ditch, my servant-man is frequently driven out of the garden by the stench. He has been made sick by it. We have been obliged to shut the back windows to keep the smell out. But for the defective drainage Epsom would be a remarkably healthy place."

*George Stilwell, Esq.*, says:—

"I am medical officer of the Epsom district of the Union, and also house surgeon. I have had that office ever since the Union was formed. In 1843, I felt it my duty, owing to the numerous cases of fever, to call the attention of the parish authorities to several open drains, &c. Part of one on the Dorking-road, from the workhouse to the corner of Woodcote-lane, was covered over in consequence."

The witness goes on to describe the existence from that time to the present of great nuisances and contemporaneous localized disease; and shews that the inadequacy of existing legal authority has led to a general anxiety for the application of the Public Health Act. I am sorry that want of space compels me to omit much of his evidence on this point.

Respecting the ditch near the National School, he says:—

"The occupiers of the land throw out the fetid mud about twice a-year, allow it to dry, and then cart it away for manure. The stench is so great that one of the visitors of the National School is in the habit of carrying chloride of lime to sprinkle on the floor. A large quantity of chloride of lime is used in Epsom for disinfecting purposes. There is a row of cottages called Bradley's Rents, with the drains from the houses under the floor-boards; the stench is almost intolerable, and I

have had disease immediately behind. A continuation of the same row is called Burgess's Cottages. They are without any drainage whatever, and I have had two cases of fever there. I quite agree with the evidence given by the other medical practitioners as to the localities and causes of disease, and the general deficiency of drainage. *I have observed, that of late years there has been a great increase of fever.* Epsom would be a most healthy place if proper sanitary works were constructed."

*Arthur O'Brien Jones, Esq. says :—*

"I am surgeon to the Metropolitan Police Force within this district, and have been in practice in Epsom 10 years. From my knowledge of the sewerage of Epsom, I think it has a tendency to produce disease. My house is situate directly opposite to the open drain or ditch on the Dorking-road, and the stench arising from it is so insufferable, that I am frequently obliged to shut all my windows. I suffer constantly from it, and should have long since indicted it, but for the difficulty of ascertaining the parties who were really liable to the indictment. During any epidemic, such as the cholera, that place might very much influence the number of cases, and consequently the mortality. The same would hold good in regard to all zymotic diseases. They might be either generated or aggravated by it in its present condition. Whichever way the wind is, its effects might be found in the direction to which it was blowing. I believe the S.W. wind to be a prevalent wind here. That would convey the malaria from the place in question to the town. Again, if the wind was blowing from the N.E., malaria of a similarly injurious kind would be conveyed to the town from the eastern entrance. So that the inhabitants are almost constantly exposed to such influences from one quarter or another. The large pond in the centre of the town is a cause of fever. I speak of it as a fact. In my own practice I have met with more zymotic disease in the immediate neighbourhood of the town pond than in any other part of Epsom. In some parts of the town the effluvium from the gratings is so offensive as to be capable of giving rise to disease. I consider that, but for these defects, Epsom would be one of the most healthy towns in the kingdom. I am of opinion therefore, that the application of the Public Health Act would be highly beneficial to the parish."

The above evidence contains many important facts, worthy of the serious consideration of the inhabitants. It will be recollected that two of the witnesses have stated that fever has very much increased within these few years. In consequence of this, I requested the Superintendent Registrar to furnish me with extracts from his registers for the years 1841 and 1848, from which it appears, that in the parish of Epsom, the value of life has considerably diminished during that period. In 1841, the average age of all who died was 44 years, while in 1848 it was only 40 years and seven months, the loss being equal to three years and five months. In 1841, the average age of all who died above the age of 20 years was 63 years and seven months. In 1848 it was reduced to 54 years and one month, a loss of nine years and a half; on farther analysing



these statistics, it appears that in 1841, 47·7 per cent., or nearly half of all the deaths, were of persons between the ages of 60 and 90, but in 1848 less than one-third, namely 30·1 per cent. of the deaths only took place during the same period of life. Between the ages of 20 and 60 only 19·7 per cent. of all the deaths occurred in 1841, while in 1848, 40·2 per cent. were included in that period. No facts could more plainly prove that the sanitary condition of the town of Epsom is much worse than it was; that whereas the bulk of the population formerly lived to old age, a very much increased proportion now dies during what ought to be the most vigorous part of human life.

**SEWERAGE AND HOUSE-DRAINAGE.**—At the opening of the inquiry I requested, according to my instructions from the Board, that the gentlemen present would mention such localities, as in their opinion required my special attention. These complaints had almost exclusive reference to the want of drainage in the town.

Mr. Stilwell, Union surgeon, complained of the sewer or ditch on the Dorking-road. Also of the drainage from privies in Coffee-house-row. Also, of the drainage in front of some houses at Clay-hill, where he stated there had been much fever. Also, of a very inefficient drain passing under the house and shop belonging to Mr. Neville, butcher. And generally, of the house-drainage throughout the town.

Mr. Everest complained of the open ditch in front of Dr. Graham's house, and of the drainage of all the houses on Epsom Common. He also wished me to inspect the town pond, and stated that the drainage below it was very defective to the eastern end of the town. He also complained of the open ditch there which conveys away all the drainage of Epsom, and extends four miles. Mr. Tomkins complained of the drainage in Church-street, and that the cesspools had caused disease.

W. S. H. Fitzroy, Esq., J.P. said that the open drain coming from the workhouse to the town was a perfect nuisance.

Mr. Langlands stated that there were more than 70 houses in East-street without any drainage whatever. Mr. W. Hailes complained that there were some very foul privies without drainage in High-street, and that there had been much sickness in consequence.

All these places I visited during the inspection, and found them to be in a very bad condition. Some will be mentioned in the following extracts from my minutes. In consequence of the numerous complaints respecting the open ditch which proceeds from the Union workhouse on the Dorking-road, I traced it to its source, and the examination led to an inquiry into the sanitary condition of the workhouse, where, as I have already

shown, there have been much epidemic typhoid fever, and many deaths.

Within the premises, and in front of the house, there are no less than 14 large cesspools, containing in the aggregate 3,711 cubic feet or 23·127 gallons of nightsoil and refuse. A large one near the entrance gate is 15 feet diameter inside, 12 feet below the surface of the ground, and domed 4 feet above the ground. It has a side door 3 feet square, and receives the overflowings of the privies, which communicate with it without traps. A pump is fixed, and the fluid is lifted into tubs, and used upon a field immediately in front belonging to the establishment. The stench in the privies and cesspools was horrible, and many persons have been made sick by its application in an undiluted state. The drainage of the Epsom workhouse has cost several hundred pounds, and was intended to be a system of cesspools, but as they were found utterly inefficient, small overflow drains have been constructed near the surface of the ground, some of which lead to the large cesspool already named, and others to the drain passing down the Dorking-road, and entirely through the town; for a great part of the distance as an open ditch, or gutter. After the most serious consideration, I do not hesitate to say that this peculiar feature of Epsom, irrespective of all the other existing evils, is sufficient to increase the mortality, not only of the workhouse, but also of the town, several per cent., and consequently to aggravate the amount of preventible sickness in an equal ratio.

All the drains are laid at right angles, and the inlets on the premises consist of nine privies with 25 openings, besides 10 grates in the court yards.

The above statements are irrespective of the old parish workhouse adjoining, now used as an hospital.

The whole of these premises are said to drain the fluid into the domed cesspool already described. The man nurse at the hospital says, that the privies are sometimes horrible, especially at night. On asking the porter how the heavier nightsoil was removed, he stated, that there are grates in all the privies to prevent it from escaping to the large cesspool with the fluid, and that throughout the whole establishment, new and old, the soil is raised by buckets with poles attached, and carried to the field in front, where it is dug into the ground the following day. The able paupers assist in digging it in, and have gin and beer given to them while so engaged. They are sometimes made sick.

The instances of entire want of drainage, and of consequent inconvenience and injury are so numerous, and the evidence given by the witnesses on this part of the inquiry is so voluminous, that I shall be compelled to omit the greater

portion, and must refer the Board to my minutes for further details.

At Woodcote Green and in Chalk-lane, I found the drainage from the cottages very bad.

All about the premises occupied by Mr. Thomas Field, the drainage from a cowhouse, piggeries, stable, privies and dung-heaps remains stagnant. He complained of the stench as being very offensive. An adjoining cottage occupied by Charles Bixley, is almost surrounded with ditches, and the atmosphere contains myriads of the small black fly which I have generally found in the vicinity of concentrated malaria. His daughter said:—

“There are only two rooms in the house, and the rent is 2s. 4d. per week. My mother has been ill, and has lost the use of her limbs. My father is very weak and delicate. They cannot eat in consequence of the foul stinking ditch close to the door. It is enough to turn anybody’s heart. It was always nearly as bad as it is now, but not quite. I have been married nearly four years, and live in a much more healthy place. I have had much better health since I left home.”

Mr. Stilwell said there had been a good deal of fever about the neighbourhood.

Mr. Charman, butcher, lives opposite to the open ditch on the Dorking-road, where the excrement of the workhouse stagnates. He states—

“Customers have told me that they could not think the meat from my shop could be wholesome, in consequence of the ditch opposite, and they should not come again. The smell is dreadful.”

The ditch is here about 3 feet wide, and for about 150 yards in length the refuse stands in pools. The end, which should be lowest, is higher than the middle. George Gardom was a man in easy circumstances, but of dissipated habits; he lived close to this ditch on the same side, but died about two weeks before my inquiry. He was attacked with Asiatic cholera, and sank within 24 hours.

William Whiffin, shoemaker, lives close to the same ditch, and complained much of it, and of the stench from his own privy, which he had no means of remedying. Mr. Stilwell said that this man’s family was almost constantly sick, and he attributed it entirely to the above causes.

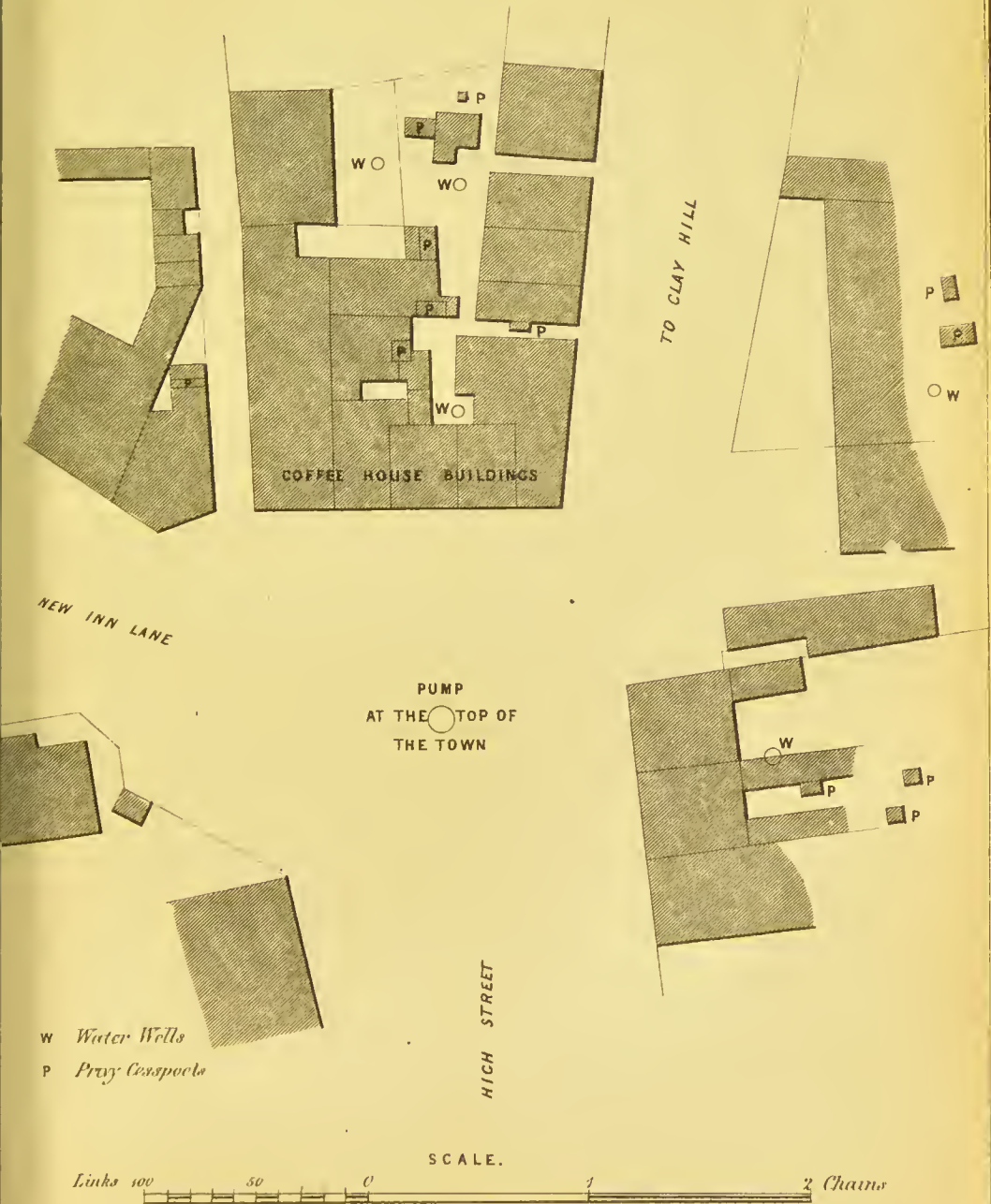
Mr. Everest’s offices are on the opposite side of the road, and he says that he keeps chloride of lime constantly to deodorise his rooms.

The Coffee-house Buildings were erected for the accommodation of fashionable visitors to the once famous spa at Epsom, and yet the drainage and sanitary arrangements are so defective that the night soil has to be carried out in buckets, and in many instances through the houses. (See Plan.) Mr. James



EPSOM.

CROWDED HOUSES, PRIVIES &c.





Careless, who keeps the hotel, complains of the abominable stench from the privies, and of the general want of drainage. His cellars have to be pumped out three times a-day. Mr. Wigsell, grocer, another occupant of this property, makes similar complaints of the cesspool. He says—

“The fluid only escapes from the privy; the soil has to be taken out by pails. I have it emptied once in two years at a cost of about 12s. per time. I think the springs break into it.”

In some of the other houses the refuse is thrown into a grate over the pump-well.

Mr. Stilwell says there have been much sickness and some cases of fever in the houses.

Mr. John Hayton complains much of a drain passing through his premises and garden, as one of the greatest nuisances in the parish.

Mr. George Tredgold, of the George inn, in High-street, says that the drainage cannot get away from his premises, and that in winter it entirely backs up his yard to the house door. In the principal street of the town cesspools are the only receptacles for house drainage.

A cellar under the front shop occupied by Mr. G. Drew is 6 feet deep, and entirely full of water. The floor over it is of boards. Mr. Resta Moore, the owner of the property, says it has been full ever since he knew it, and that there are no means of getting the water away. Mr. Moore is a skinner, and says further that the stench from the refuse on his premises is very bad, and much complained of, but he cannot get any outlet.

The police station is quite flooded in heavy rain, sometimes a foot deep, and the only receptacle for refuse is a cesspool. I examined the cottages in Kingston-lane, where Mr. Allan had several cases of cholera in September last, and found the drainage very defective and stagnant.

Mr. Langlands is the owner of a considerable number of cottages in East-street entirely without drainage, and with stagnant privies just behind the houses. He acknowledged the evils, and is very anxious for improvements, but says that none can be effected under the present arrangements. Immediately behind the almshouses I found a large open privy cesspool, giving off great quantities of sulphuretted hydrogen.

Burgess's property at the bottom of High-street consists of 10 houses; 8 of them are built of wood. They have a drain at the back, in which the refuse stands within a foot of the surface. There are two foul privies, with a sunk cesspool, and a hole contains all the decaying vegetable and other solid refuse of the houses. The other two houses have a very offensive open gutter, and the wife of one of the tenants says the landlord will not do anything to the property.

In Church-street there is a collection of filthy stagnant drain-



age on some property late Morris's, now belonging to the railway. An attempt was made to remedy this under the Nuisances Removal Act, but the effect was that the place was made worse. This case will be found alluded to in the evidence of Edward Richard Northey, Esq., one of the justices who made the order for its abatement.

Behind Mr. Barnard's and Mr. Hulbert's, in High-street, there is a most abominable nuisance, arising from the combined effluvia of a slaughter-house and a foul privy cesspool. I was informed that many persons refuse to buy meat from Mr. Barnard in consequence of the stench on his premises. This was much complained of by Mr. Hulbert, who said that all his children had been sick, and that he had lost one of scarlet fever; that his wife had continued low fever, and that he had been ill of typhoid fever three months, during six weeks of which he was entirely unable to attend to business. He said his medical attendant and he had no doubt that the fever was caused by the bad effluvia.

Among the evidence given as to drainage during the inquiry, *Benjamin Tomkins, Esq.*, says—

“When I took my house I objected to it in consequence of an open drain nearly opposite, on the premises of the Railway Company. I was told that they were about to remedy it immediately, and therefore took the house. I made three applications to the Directors, and about three weeks since they stopped back the drains of the cottages, threw out the mud, and left it exposed. It is now nearly as bad as it was before, and the Surveyor of the Company says they can do no more for want of depth and fall in the town drain. At my own house I have endeavoured to drain water from the cellar into the sewer, but have not been able to obtain a fall; and yet *my cellar floor is only 2 feet below the ordinary surface of the ground*. There is an open grate from the sewer, on the road, at the corner of the kitchen, and it is extremely offensive at times. I decidedly think that the application of the Public Health Act will be very beneficial to the parish of Epsom.”

*George Giberne, Esq.*, said—

“I have resided in Epsom two years. My house is situated on the chalk, at the higher part of Church-street. There are three cesspools on my premises without drains into any sewer. In other parts of the town, especially about High-street, I generally find a close unpleasant smell, quite different from what it is at home. The drains are mostly open, and in visiting the poor, as a Guardian of the Union, I perceive bad effluvia in their houses. The houses in the lane on the London-road, leading to the withy-beds, are peculiarly offensive. I believe that improved drainage and sanitary arrangements would be a great blessing to the inhabitants. I also consider that if power could be obtained for giving an abundant supply of water it would be a great advantage. Outside the town the air is very pure and healthy.”

*Edward Richard Northey, Esq.*, says :—

“I am one of Her Majesty's justices of the peace for the county of

Surrey. The parish of Epsom is naturally very healthy, but there is almost an entire absence of drainage in different parts of the town. I am one of the trustees of the National School, and know that the open ditch in the immediate vicinity of that building is calculated to be very prejudicial to health. I signed, along with the Earl of Egmont, an order under the Nuisances Removal Act, for the abatement of a nuisance in Church-street, but from the want of adequate powers we were unable to effect any good. In fact the evil would have been rather increased than otherwise, by the formation of a dam for the refuse. I attribute much of the disease on the Common to the want of land drainage. With reference to the town pond, if it were always full perhaps no injury would be experienced, but it is frequently nearly empty in the summer season, and then is undoubtedly a nuisance.

“From my knowledge of the different localities in Epsom, I am satisfied that additional legal powers are necessary for its improvement. I should like to see power in the hands of a Board to effect such improvements. As a great ratepayer I shall be most glad to pay my share of the cost of proper works. I am aware, that there is no power at present existing, to enforce any regulations as to drainage, cleanliness, and health. I think there ought to be.”

*Mr. Andrews*, architect and surveyor, thus concludes his evidence:—

“I think that the Public Health Act would be a great boon to the inhabitants of Epsom. The filthy undrained state of the buildings, especially those occupied by the lower classes, has a very depressing, demoralizing tendency.

“I have had several applications from strangers, for residences in the parish, but from the state in which they have observed some of the public ditches, particularly that on the Dorking-road, they have taken such a distaste to the place as to have refused to live here. The suburbs afford almost innumerable advantageous sites for houses of the better class, and I have no hesitation in saying, that if proper sanitary arrangements were carried out, it would add greatly to the prosperity of the place.

“The town of Epsom is visited by an immense number of strangers.”

LAND DRAINAGE.—From the description already given of the geological nature of the district, it will be evident that on the east and south-east side of the parish no artificial land-drainage will be necessary. In other parts of the parish a considerable quantity of land has been drained within the last few years, and with very great advantage. Pipes are used  $1\frac{1}{2}$  to 2 inches bore, at an average depth of 4 feet, and 30 feet distance. It was stated in evidence on the inquiry, that the Common would be improved 50 per cent. or more, by drainage. Pipes and tiles of good quality are made upon the spot, and the contour of the land is very favourable for the improvements required.

I was informed that the average rental of land is 25s. per acre, with a rent-charge of 7s. in addition. There is good land however let at a lower rate.

**PRESENT WATER SUPPLY.**—Epsom is without any public water supply, and the private arrangements for securing this necessary of life are so defective that I have scarcely visited a town in a worse condition.

In bringing this subject before the Board, I shall state, as briefly as possible, the information obtained during my inspection, and then quote a portion of the evidence given.

I have already alluded to the drainage of the Union workhouse. The water supply is not more satisfactory. I was informed by the governor that rain-water is caught, and that the Guardians paid 170*l.* for a rain-water cistern which cannot be used, because the water is polluted. There is a cesspool with a grate over it within a few feet, and the soot also defiles it. There are two wells, one of which is 70 feet deep and sunk into the London clay, but it is not used. The whole supply is obtained from a subsoil gravel well only 20 feet deep. The supply is said to be inexhaustible; but from its nearness to the surface, and the existence of so much decomposing matter, it must be constantly liable to pollution. The water is pumped into a tank on the top of the building by means of a force-pump. The water for washing the clothes of about 250 persons is conveyed in a barrel from a gravel pit above 100 yards distant.

The following statement, made in answer to my inquiries by a poor widow named Mary Neville, residing near Clay Hill, is very affecting:—

“I have lived here seven years. My husband has been dead two years. I pay 3*s.* 6*d.* per week rent, and have 1*s.* 6*d.* per week from the parish, besides six loaves of bread. I have had 12 children, and have eight living; four of them at home to keep. I have inflammation of the eyes. It commenced two years ago. I have been in a very low state of health for a long time. I have to fetch all the water about 100 yards. I take two pails, holding three gallons each, to the public pump. When washing, I sometimes go four times a-day, generally twice a-day. I keep a mangle, and some weeks get 2*s.* to 2*s.* 6*d.* per week by it, but in winter not more than 1*s.* When I am able to go out and get a job I wash by the day; I am used to washing. It is a great trial to me to carry two pails of water; I feel it very much in my chest, where I am weak. It takes me a quarter of an hour to go once, and when I am washing, an hour a day; at other times, half an hour. Many times we go without water, because I am not able to fetch it. *If we could have a tap in the house which would always give good water, and not more than a penny per week to pay, it would be a great blessing.*”

*Mr. Resta Moore* wished me to look at his draw-well, from which the whole of the water has to be carried 30 or 40 yards distance. He said:—

“My well was recently polluted, and we could not drink the water until I took out the gravel, and clayed it, and cemented the walls, at a



cost of about 2*l.* That has just been done. The well cost, altogether, 35*l.* ten years ago, and yet we have had to buy water for about five years at a halfpenny per pail."

*Serjeant Kennedy*, of the V division, says that they are very badly off for water at the police-station. They get it from the town pump. Sometimes the policemen carry it, and sometimes his wife is compelled to buy.

*Mr. John Hopkins*, in High-street, complained very much that the water-well at his house could not be used because the night soil from the cesspool runs into it. He had been obliged to get a barrel to fetch water from the town pump. He pays 21*l.* per annum rent.

*Mr. Allan*, surgeon, also gave some valuable evidence as to the water supply. He says:—

"In our house we use rain-water for cleansing and cooking, but for drinking we send for water from Church-street. We collect the rain-water in a large leaden cistern about 7 by 4 by 4 feet. We are sometimes without rain-water, and then we use the water from the public pump, at the eastern end of the town. We were lately without rain-water for several weeks. The pump-water is not always clear after heavy rains, and then we send to *Weller's Pump*, which is about 200 yards from my house. From that pump most of the inhabitants fetch their water. It has to be paid for. The price, as I understand, is 1*s.* 6*d.* for a butt of 60 gallons, delivered in any part of the town; including 6*d.* for water and 1*s.* for leading. For a pail of two-and-a-half gallons, or any less quantity carried to the door, the price is *one halfpenny*."

There are two public pumps, one is called "at the top of the town," and the other "at the bottom of the town." The most pleasant water, is however undoubtedly that purchased from *Mr. Joseph Weller's* pump, above named.

On examination, *Mr. Weller* said:—

"I have a pump, from which a good deal of water is fetched into the town. The well is about 24 feet deep. The price I charge is 2*d.* per barrel, and one farthing per pail. A few years ago, before there were so many wells in the town, it produced from 10*l.* to 11*l.* per annum; but now not more than 5*l.* to 6*l.* About a month back there would be a dozen barrels per week, and about the same number of pails. One of the persons who sold water in barrels has given up because it did not pay him at 1*s.* to 1*s.* 6*d.*, which was the price he charged per barrel for leading. One great reason for the income of my pump falling off is, that many of the leaders go to the pump at the top of the town, when the purchasers expect that the water is from my pump. The water from this pump is of very good quality. The barrels contain from 36 to 60 gallons."

As to the cost of the present arrangements for water, I obtained some important evidence from *Mr. Andrews*, Architect. He says:—

"There are a few soft-water cisterns in Epsom. They are princi-

pally lead cisterns, and would cost about 7*l.* Water-butts are very numerous: they cost about 2*l.*s., and will last, with repairs, 6 years. I should say that the expense of repairs would be 4*s.* per annum. The buckets or pails will hold three gallons. They cost 2*s.* 6*d.* each, and will last four years, with an expenditure of about 2½*d.* per annum for repairs. Excepting the houses inhabited by the more wealthy, there is not a well to every 10 houses. Very few wells contain good water for general domestic purposes. Where such wells do exist, they are at an average distance of 15 to 20 yards from the doors of the houses. Not more than one-fifth of them have pumps. The wells cost on the average about 7*l.* complete. Taking the town through, there would be about one well to six houses. *Many houses have no water supply at all.* The water used for cooking and eating in the town is almost entirely obtained either from Weller's or the public pumps. *Private pumps are the exception.*

"*The water for cleansing cannot, I think, be drawn and carried for so little as one penny per week.* Little children cannot be employed in drawing and carrying it, the operation would be dangerous. The condition of some of these wells is dangerous, but I never knew any one fall into them. Leaving Weller's pump out of consideration, because the water is purchased there, and confining the answer to the two public wells, the average distance that water has to be carried would be 100 yards. The lowest calculation that could be taken as to the present consumption would be three pails per day for each house. The market price for it delivered, is one halfpenny per pail. The surveyors of the highways keep the public pumps in repair out of the highway rates. On an average, the amount would perhaps be 15*s.* per annum each.

"*The people economise water to an extent that is injurious to health, on account of the expense.*"

From this evidence, it will be easy to ascertain the actual cost of water to the middle class and poorer inhabitants of Epsom, and to compare it with the estimated cost of an adequate supply furnished from works constructed under the control of a competent public authority. The present charges are, according to the evidence, for those who have a pump common to six houses:—

	s.	d.
Annual interest on one-sixth of the first cost of the well . . . . .	1	3
Annual interest, depreciation, and repairs of buckets . . . . .	0	11½
Annual interest, depreciation, and repair of water-butt . . . . .	8	6½
Drawing and carrying water from well at 1 <i>d.</i> per week, annual . . . . .	4	4
Total . . . . .	15	1

Equal to 3½*d.* per house per week.

It must be observed, that I have omitted entirely the cost of pumps, and that where there are fewer houses than six to one well the proportion of the first cost chargeable to each house

would be greater than the above. Also, that where there is no private well, or soft water butt, the poor inhabitants suffer an inconvenience more than equivalent to the cost of such receptacles. This will be evident from the consideration that if all the water used were three pails per day, or nine gallons for a family, and it were carried at only half the price regularly paid, it would amount to an annual tax of 1*l.* 3*s.* 1*d.*, or 5¼*d.* per week per house.

**THE TOWN POND.**—The town pond has been already alluded to by several of the medical witnesses as a cause of disease, and by Mr. Northey as a nuisance at certain periods of the year. This pond is situated in the centre of the town, and contains 1030 superficial yards of evaporating surface. It is supplied by a waste drain from the pump “at the top of the town,” and is discharged by an overflow drain just beneath the surface of the street. At the time of my visit, the evaporation was so much greater than the supply, that the surface was considerably below the level of the overflow drain, and partly covered with a thick scum. Mr. Andrews says that there is a foot deep of mud in it at the present time; and both he and Mr. Giberne assured me that it frequently contains the dead bodies of cats and dogs. The pond is occasionally cleansed by the Surveyors of Highways, but their liability to do so is disputed by the inhabitants.

*Mr. Wm. Harsant*, chemist and druggist, in High-street, said in his evidence:—

“In the summer, when fevers are prevalent, the pond is low, and I have no doubt that the miasma from it has an injurious effect. In winter, when the water is high, it makes the atmosphere damp. I have one of Arnott’s stoves, and I consider that I have to keep it heated one month longer than I should otherwise have. I live near the pond, and frequently see the carcasses of dead animals in it.”

I have dwelt longer upon the condition of the town pond, because some of the inhabitants deprecate its destruction, and assert that it is neither injurious nor a nuisance.

**CONDITION OF THE ROADS, CLEANSING, &c.**—The surface of most of the public highways is well kept up. The only remarkable exception I observed was Wheeler’s-lane. The carriage way seems never to have been repaired, and is literally a quagmire. It is not, however, a road much used. The greater portion of the principal line of road through the town is repaired jointly by the Epsom and Tooting Turnpike Trustees, and the Horsham Trust. The total length of public highways repaired by the parish is 25 miles, and the average income from rates during the last two years is 550*l.*, being a rate of 10*d.* in the pound. The average expenditure during the same period is about 520*l.* Nearly the whole of the labour is performed by the day. The materials used for carriage ways



are flints, which cost 3s. 3d. per yard, broken. For footways, York paving, complete at 9d. per superficial foot, and kerbs 1s. 6d. per foot run. Good gravel for footways is found in the parish, and costs 1s. 9d. per load, delivered. There is no systematic cleansing of the surface of court-yards or private places, nor of the public roads, except by the Surveyors of Highways, who have no authority to cleanse, except for purposes of repairs. *Mr. Everest* says:—

“The streets are not watered. Some of the inhabitants a few years ago subscribed, for this purpose, various sums from 5s. to 20s. each, but the subscriptions fell off, and the cart had to be sold to pay off the arrears. The roads are dusty in summer, and there is a general desire to have the streets systematically watered, under a properly constituted public authority.”

Such drains as exist are under the control of the Surveyors of Highways.

STATE OF THE BURIAL-GROUNDS.—The burial-ground at the parish church contains about two acres, and the annual average number of interments is about 80. The usual depth of graves about 8 feet. Twenty years ago half an acre was added to the churchyard, but interments occasionally take place in the old ground, so that it is crowded, although there is plenty of room in the new part. The soil is chalk, and I was informed that bones are sometimes exposed in the old portion, but not to a great extent. There are no burials at Christ Church. There is a small burial ground connected with the Independent Chapel, but it is not filled with graves.

GAS WORKS.—*Mr. John Steele*, one of the Directors of the Gas Works, says:—

“The capital stock of the Company is 5,700*l.*, consisting of 300 shares of 19*l.* each. The concern is not very prosperous. The shares have been as low as 1*l.*, but I would not sell now for 15*l.* There are nine retorts, but only two used at present. The price of gas is 12s. per 1000 feet, and the public lamps are lit from six to seven months for 50s. each. Gas is not much used in private houses. The tar is sold occasionally at 3d. per gallon; it is used for coarse painting, but there is not much demand for it, and we have hundreds of gallons now on the premises. If you can find a use for all of it under the Public Health Act, we would accept 1½d. or 1¾d. per gallon. I should think the Company would have no objection to transfer the Gas Works to a Local Board of Health, on the security of an equitable dividend in perpetuity.”

## REMEDIES.

After the evidence adduced in this Report, it seems unnecessary to say that the remedies for the evils enumerated are contained in the provisions of the Public Health Act, and that its application to the parish of Epsom will be of incalculable advantage to the inhabitants. I have already stated that the

parish boundaries are most suitable, that the climate is naturally very salubrious, and that the physical contour and geological character of the district are highly favourable for the construction of efficient sanitary works.

I would add, that the absence of any previously constructed, partial works, affords the fairest opportunity for economical and efficient sanitary improvements. Nothing has been done in Epsom, and therefore nothing will require to be either undone, or inconveniently adapted as a part of the general system. In the words of one of the witnesses, "there is not really a sewer in the town."

Taking all these circumstances into consideration, the town and parish of Epsom is the best locality I have yet visited for proving, at a great pecuniary saving, the advantages of cleanliness and health, when compared with filth and disease.

IMPROVED WATER SUPPLY.—The decomposing animal and vegetable substances which at present pollute the atmosphere of the town, and engender disease, cannot be removed so effectually and economically by any other agent as by water. Without a *proper* supply of water, the advantage of the best constructed drains would be more than questionable. They would only form generators and conduits for concentrating noxious gases in and about the dwellings of the inhabitants.

A supply of water to be *proper*, must be pure in quality, abundant in quantity, and accessible where required. To comply with these conditions, it must be free from all injurious chemical or mechanical ingredients, constantly on, under pressure, and with a tap in every house, and water closet.

The numerous purposes for which a supply of water will be needed under perfect sanitary arrangements, has occupied much of the attention of scientific men, and it is now settled that for food, washing, cleansing, and all other domestic operations; for the immediate removal of all refuse and excreta before decomposition has taken place; for baths, inns, stables, and manufacturing purposes; for washing, cleansing, and watering the surface of streets and courts by the hose-pipe and jets of water; and for extinguishing fires without the necessity for engines, not less than 25 gallons per day must be provided for each individual of the population.

Some few houses in the parish are undoubtedly beyond the reach of supply, without greater expense than would be justifiable, and I have, therefore, in the following estimate made provision for a supply to 3,600 persons residing in 560 houses. The quantity necessary for such a population would be 90,000 gallons per day, or 5,287,227 cubic feet per annum.

This water I should collect by underdraining a portion of the Common, which is now comparatively valueless, but would thus become excellent land.

There is already a large pond near Woodcote Lodge, about three acres in extent. This might be enlarged and made available as a store reservoir. I obtained samples which have been analysed by Dr. Lyon Playfair, and prove the very suitable quality of the water from this locality. The following are the degrees of hardness of three waters in Epsom:—From the Pond on Woodcote-green, 5° 25'; from the Pump "at the bottom of the town," 17° 90'; Pump "at top of the town," 25° 56'.

I have already stated that no meteorological observations have been kept in Epsom, and that I should therefore assume for safety an average rain-fall of 25 inches. From this a large deduction must be made for loss by evaporation, vegetation, and springs. I should allow for these, 16 inches, leaving 9 inches of the annual rain-fall as a quantity that may be safely considered available for the supply of the town; this would therefore sink through the soil into the collecting or land drainage pipes, and be conveyed to the reservoir.

In order to provide for a period of drought, such as occasionally occurs, it will be necessary to provide storage for about 140 days' supply, and this will require a space equal to 4 acres of water, of an average depth of 12 feet. From this reservoir the water would be conveyed to the town by an iron main-pipe, and distributed by mains through all the streets, with a service-pipe and tap in every house and water-closet, or improved privy apparatus. Such taps would be constantly charged with water under pressure.

In order to bring the cost of this before the Board, and the inhabitants of Epsom, in as plain a manner as possible, I have prepared estimates, but I feel it necessary to say, that these estimates being made without plans, sections, or other data, necessary to ensure precise accuracy, cannot be taken as more than approximations to the actual cost. With this reservation I have no hesitation in saying that the charge to the poor will not exceed the sum stated.

*Estimate for Water Supply.*

	£.	s.	d.
Land . . . . .	315	0	0
Reservoir with sluices complete . .	500	0	0
Iron main pipe . . . . .	612	0	0
Street mains . . . . .	1,710	0	0
Iron service pipe and tap to each house and closet or privy. . . . .	560	0	0
Fire plugs . . . . .	30	0	0
Total . . . . .	£ 3,727	0	0

It is provided in the Public Health Act that the cost of con-



structing the necessary works may be borrowed on security of the public rates, and repaid by annual instalments, with interest, in a period not exceeding 20 years. By this means the annual instalment for the water-works of Epsom would amount to 220*l.* 11*s.* 10*d.* I now come to consider the mode of raising such sum. It has been stated that the houses in Epsom are rated at a low valuation, but notwithstanding that, I would recommend that all houses not exceeding 10*l.* rateable value should only be charged *one penny per week for a constant supply of water.* From 10*l.* to 15*l.* I have estimated at 1½*d.*, and those above 15*l.* at 2*d.* per week. There would be other sources of income which I have stated approximatively as follows:—

*Annual Income for Water Supply.*

	£.	s.	d.
377 houses at 4 <i>s.</i> 4 <i>d.</i> . . . . .	81	13	8
87 „ 6 <i>s.</i> 6 <i>d.</i> . . . . .	28	5	6
96 „ 8 <i>s.</i> 8 <i>d.</i> . . . . .	41	12	0
Extra services for baths, dressing-rooms, &c., in large houses . . . . .	20	0	0
For supply to stables . . . . .	10	0	0
For supply to breweries, railways, and manufactories . . . . .	40	0	0
Total . . . . .	£ 221	11	2

Surplus of income 19*s.* 4*d.* per annum.

It must be borne in mind that, as the works will be public property so soon as the annual instalments cease, the water may then be supplied almost gratuitously.

SEWERAGE AND DRAINAGE.—Having obtained an abundant supply of water, the effectual drainage of the town becomes easy to accomplish.

I should lay down a system of earthenware pipes at a sufficient depth to drain the foundations of all the buildings, commencing in the higher parts with about 6 inches diameter, and increasing to about 10 inches at the eastern end of the town, where they would converge to a larger pipe of 12 inches in diameter to be used for conveying the whole of the sewage away from the town to the most suitable locality for its application to the land as liquid manure. From the street drains smaller pipes would be conducted to every sinkstone, cellar, rainwater-pipe, court, and water-closet or privy provided with soil-pan apparatus, so that all offensive matter should be removed without delay. Every opening, except those connected with the spout-pipes from the roofs of buildings, should be provided with syphon-traps.

With the reservation already stated as to the absence of plans

and other necessary information, I have prepared estimates of the cost of construction and of the income that may be expected from this source as follows:—

*Drainage Estimate.*

	£.	s.	d.
Drainage pipes, and laying . . .	1,710	0	0
Conveying pipes from town . . .	495	0	0
House and court drains, with traps, including soil-pan apparatus . . .	1,080	0	0
<b>Total . . .</b>	<b>£ 3,285</b>	<b>0</b>	<b>0</b>

If the funds for constructing the works were borrowed and repaid by annual instalments in the manner already described, the annual amount would be 194*l.* 6*s.* 11*d.*, which I should provide for in the following manner:—

*Annual Income for Drainage.*

	£.	s.	d.
377 houses at 4 <i>s.</i> 4 <i>d.</i> . . . . .	81	13	8
87 „ 6 <i>s.</i> 6 <i>d.</i> . . . . .	28	5	6
96 „ 8 <i>s.</i> 8 <i>d.</i> . . . . .	41	12	0
Stables, breweries, and manufactories . . . . .	40	0	0
	191	11	2
Deficiency . . . . .	2	15	9
<b>Total . . . . .</b>	<b>£ 194</b>	<b>6</b>	<b>11</b>

It will be observed that in this system I have not made provision for the underground removal of rain-water, except that which falls upon the buildings and courts of the town, because when everything offensive and injurious has been removed it will be quite unnecessary to incur a very large permanent expenditure for the reception of an occasional thunder-storm.

SEWAGE DISTRIBUTION.—I have already shown that much agricultural land in the parish will be improved by thorough drainage, and also that such drainage may be effected with facility and economy. A further improvement in the suburban land remains to be noticed, namely, the application of the town sewage as a fertilizer. Wherever the refuse of towns has been so applied the results have been astonishing.

At Ashby-de-la-Zouch the water of a brook, into which part of the sewage of the town runs, has been used to irrigate some meadows below the town, and the agent to the Marquis of Hastings stated to me in evidence, that the increased value to only 40 acres of land was not less than 100*l.* per annum.

It is not necessary to occupy time by mentioning the meadows similarly irrigated in the vicinity of Edinburgh, and which now let at from 20*l.* to 40*l.* an acre. It is proved by chemical analysis not only that the excreta of towns contain all the elements of food, but that such elements are in the state in which they can be most easily assimilated and taken up by plants.

I called the attention of Mr. Andrews to this subject, and pointed out that part of the district which I considered most convenient for such application. The following is his evidence :—

“Liquid manure has not been used in the parish. I have heard of the increased productiveness from its application. Between Epsom and Ewell there is a sufficient extent of land to take all the sewage of the town. It would be used very beneficially for the land, and applied at little expense. Much of the land there is already drained, and arrangements are in progress for draining such portion of the remainder as may require it. So that the land would be in a fit state to receive it as soon as the necessary drainage works of the town could be constructed. The demand would exceed the supply.”

I have examined the district named in Mr. Andrews' evidence, and from experience I have little hesitation in saying that the parish of Epsom is so favourably situated that the income to be derived from the application of the refuse to the land may be fairly expected to pay the greater portion of the rates to be levied under the Act.

IMPROVED PAVING AND CLEANSING.—The public carriage-ways in Epsom are generally in good condition, but some are capable of great improvement under scientific management. The great expense of York paving precludes its extensive use for footways and courtyards. The surface of the courts is almost universally filthy, unwholesome, and disgusting. I would, therefore, recommend as a cheap and durable material, a concrete formed of gravel and gas-tar. If properly constructed it is impervious to moisture, easily cleansed, and will last many years without expense. If the footpath in front of a house were 5 yards long, and 2 yards wide, and the average extent of court to each house 5 yards by 6; the whole would be 40 superficial yards, which at 1*s.* per yard would amount to 2*l.*, or, a private improvement rate of one half-penny per week, per house. This sum for a smooth, dry and clean pavement, would be more than saved to the inhabitants in shoes alone.

With such pavement, an abundant supply of water, and efficient drainage, the whole surface of the town, including the streets and court-yards, could be washed perfectly clean, at regular intervals, and watered in summer, by flexible hose-pipes, screwed on to the fire-plugs, so as to apply jets of water under pressure for the removal of all filth. The cost of this mode of town cleansing and watering, need not exceed a further sum of one half-penny per week.



## SUMMARY OF RECOMMENDATIONS AND CONCLUSIONS.

I. That there is much endemic low fever in Epsom; that epidemic typhoid fever at present exists upon confined areas in the town; that this, and scarlatina have been prevalent, and very fatal during the present year, that malignant cholera has shown itself in the town, and that there is much preventible sickness and mortality.

II. That from the contour of the parish; its geographical position; its geological character; and the purity and softness of the atmosphere outside the town, Epsom ought to be one of the most healthy places in the United Kingdom.

III. That the circumstances of a large proportion of the population are such as to place them beyond the necessity of actual labour; and that the occupations of the poorer inhabitants are generally very conducive to health.

IV. That there is an entire absence of all sanitary arrangements in the town.

V. That the surface of the town is everywhere perforated with cesspools, and that these, and the filthy untrapped privies, large accumulations of decomposing animal and vegetable matter, disgusting ditches, and stagnant drains, in the midst of ill-ventilated courts and dwellings, are sufficient causes of the excessive sickness and mortality already stated to exist.

VI. That the town pond is a nuisance, and a cause of disease.

VII. That the health of the inhabitants would be much improved by—

1. A constant supply of good water under pressure conveyed into every house in the town.

2. A system of deep pipe drainage of the site of the town.

3. The destruction of all cesspools, and the substitution of soil-pan apparatus, or water-closet, for the present offensive privies, and the removal in under-ground channels, of all decomposing liquid refuse.

4. Improved paving of streets and courts.

5. Public washing and cleansing of streets, courts, and the general surface of the town with hose pipe and jets of water.

VIII. That these objects may in all probability be effected at the following rates per week, for a cottage house:—

1. Supplies of water not exceeding *one penny*.

2. Street, court, and house drainage not exceeding *one penny*.

3. Paving of front footways and courts at *one halfpenny*.

4. Public cleansing of streets, courts, and alleys at *one halfpenny*.

IX. That there is much land in the parish of Epsom very imperfectly drained, and that such land will be greatly benefited by thorough drainage, and by the application of the sewage manure of the town.

X. That such application of the sewage to agriculture will yield a large revenue to the town, which revenue may be applied in reduction of the local rates.

XI. That the cost of water-supply, drainage, improved paving, and public cleansing, will be less than the *real cost* of the present defective arrangements for obtaining water alone, and therefore, that, irrespective of improved health, the application of the Public Health Act will be a great boon to the district.

XII. That powers should be given to the Local Board of Health, enabling them to purchase the existing gas works.

#### WHEREUPON I RECOMMEND —

1. That the Public Health Act, 1848, except the sections numbered 50 and 96 in the copies of that Act printed by Her Majesty's printers, should be applied to the parish of Epsom, in the county of Surrey.

2. That the powers, authorities, and provisions of the said recited Local Act, "for more effectually assessing and collecting the Poor-rate, and all other rates and assessments in the parish of Epsom, in the county of Surrey, and for the better management of the business and affairs of the said parish, and for other purposes relating thereto," shall not be applicable to the rates to be levied under the Public Health Act, nor to the powers, authorities, and duties of the Local Board of Health.

3. That the Local Board of Health to be elected under the said Public Health Act, shall consist of nine persons, and that the entire number shall be elected for the whole of the said district.

4. That the first election of the said Local Board of Health, shall take place on the twenty-fifth day of March, in the year of our Lord, one thousand eight hundred and fifty.

5. That one-third in number of the said Local Board, shall go out of office on the twenty-fifth day of March, in each year subsequently to that in which the said election takes place.

6. That every person at the time of his election as member of the said Local Board, and so long as he shall continue in office by virtue of such election, be resident, as in the said Public Health Act, 1848, is required, and be seized and possessed of real or personal estate or both, to the value or amount of not less than one thousand

pounds, or shall be so resident and rated to the relief of the poor of some parish, township or place, of which some part is within the said district, upon an annual value of not less than twenty-five pounds.

I have the honour to be,

My Lords and Gentlemen,

Your very obedient Servant,

*The General Board of Health,*  
    &c.

WILLIAM LEE.

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